Ventilation Overview

Breathing is a vital function of the human body. Not getting enough air, or being unable to breathe on your own, puts a person at risk for health complications. If a person's breathing is obstructed, or he or she is unable to get enough air, a machine called a ventilator may be used.

The Breathing Process

Here is how the normal breathing process works. Each time a person breathes through the nose or mouth, air is inhaled. When the incoming air gets to the lungs, oxygen goes into the blood. Then, each time the heart pumps, it circulates the oxygenated blood through the lungs out to the body so the body can function. Also, each time a person exhales, carbon dioxide (CO2) is released from the body.

Anything that affects the rate at which a person breathes also affects the amount of air he or she inhales and exhales. Normal breathing is considered 12-20 breaths and a volume of 7 or 8 liters of air per minute. If a person is not breathing normally, the two most noticeable types of breathing are big deep breaths and rapid shallow breaths.

Reasons for Ventilation

1. When a patient undergoes major surgery, a ventilator may be used. A ventilator helps to ensure that a patient under anesthesia gets sufficient air. Following a surgery, a patient is typically able to breathe on his or her own.
2. When a patient experiences trouble breathing, a ventilator can be used to make sure sufficient air goes into the lungs. The ability to inhale (breathe in) and exhale (breathe out) properly are equally important.
3. When a patient is unable to breathe on his or her own. A ventilator is used as life support as the patient relies on the machine for breathing.

Medical conditions that affect breathing include:

- Respiratory failure
- Chronic Obstructive Pulmonary Disease (COPD)
- Acute Respiratory Distress Syndrome (ARDS)
- Heart disease
- Other pulmonary illnesses

Maintain
30
Degrees

NOTE: To reduce the chance of fluid build up in the lungs, known as ventilator acquire pneumonia (VAP), when a patient is on a ventilator, raise the upper part of the patient's bed to at least a 30 degree incline. By keeping the patient's head and chest elevated, the risk of getting pneumonia is reduced.

Connection and Communications

At Daniel Drake Center, patients who need help breathing are connected to a ventilator through a tracheostomy (trach) tube. The trach provides a direct connection to a person's airway through his or her neck. A person with a trach is usually unable to talk since all airflow occurs below the vocal cords. Without air passing over the vocal cords, which are at the top part of the neck, no sound is made.

Commonly Used Terms

- **COPD** – Chronic Obstructive Pulmonary Disease, also known as chronic bronchitis and emphysema. These are conditions that affect the airflow.
- **Decannulate** – removing the trach tube from the neck
- **Extubate** – removing a endotracheal (ETT) tube from a person's nose or mouth
- **Intubate** – placing a endotracheal (ETT) tube in a person's lungs through the nose or mouth
- **Mechanical Ventilation** – providing air pressure through a machine to support the breathing function
- **Muscle Atrophy** – refers to muscles that become too weak to function properly
- **Pulmonary** – refers to the lungs
- **Respiration** – refers to exchange of oxygen and carbon dioxide
- **Tracheostomy** – a procedure that makes an opening in the neck and provides direct access to the trachea
- **Ventilator** – the machine that breathes for a person who is unable or that is used to support a person's breathing.